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ABSTRACT

This publication, from a non-profit organization in Britain concerned with educational facilities design, aims to stimulate a debate about the building environment of secondary schools in relation to other dimensions--people, the learning process, and the institutional framework. Its chapters are: (1) "School Buildings in Britain Today"; (2) "Institutions Out of Place," addressing how changes in society and education should influence changes in schools' physical facilities; (3) "Buildings as Frames for Life," addressing the symbolic and relationship-building aspects of schools; (4) "Design Examples," including illustrations from Britain, the Netherlands, and the United States; (5) "Partnership and Participation," describing the current "stifling" process for designing school buildings in Britain and offering a new approach to school architecture; and (6) "School Works Recommendations." (Contains the School Works process diagram and 56 references.) (EV)

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Learning Buildings
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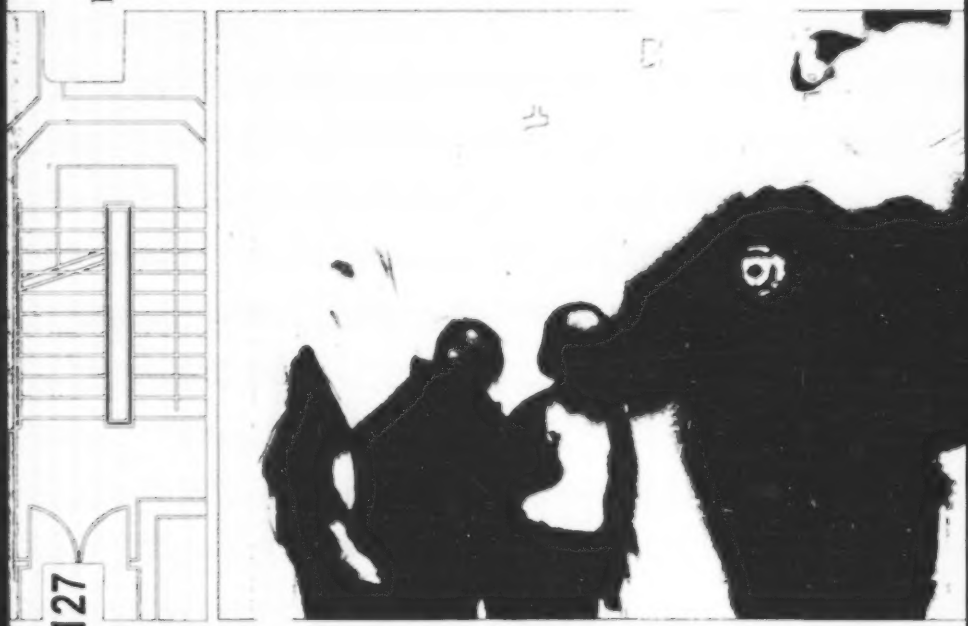

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School Works

Learning Buildings
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With thanks to
Tom Bentley, Ceri Willmott
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School Works is a groundbreaking national project, which asks how we might build, renovate and use school buildings in ways which raise educational achievement and support a culture of lifelong learning in local communities.

School Works is new in three key ways:

— Examining the connections between the quality of the built environment and the experience and outcomes of learning.

— Exploring the need for new, broader partnerships in producing solutions: participation is at the heart of the project.

— Testing new forms of implementation: policy making through practice.

School Works Ltd is an independent, not-for-profit company, core funded by the Department for Education and Skills.

Contents

01 **About School Works**

03 **Introduction**

Chapter 1:
08 **School Buildings in Britain Today**

Chapter 2:
11 **Institutions Out of Place**
12 A Technology Rich Society
14 A Lifelong Learning Society
15 Flexible Work in Well Designed Spaces
18 A More Open and Diverse Society

Chapter 3:
21 **Buildings as Frames for Life**
21 Building Symbols
24 Creating the Right Environment
26 Building Relationships
26 The Student Community
28 The Teaching Community
29 Student Behaviour
29 School Buildings in the Wider Community

Chapter 4:
31 **Design Examples**
31 Britain
34 The Netherlands
35 The United States

Chapter 5:
37 **Partnership and Participation**
38 The Current Framework and Process for Designing School Buildings
38 The Client Structure
39 Regulations and Guidelines
41 Funding and Procurement
42 The Way in Which Architects are Engaged and Paid
43 The Architecture Profession
44 A New Approach to School Architecture
44 Participation
45 Partnership

Chapter 6:
48 **School Works Recommendations**

52 **School Works Process Diagram**

54 **Bibliography**

School Works links the design of secondary school buildings to the educational agenda. A 21st century curriculum and the challenge of lifelong learning demand a new and integrated approach to the design of the physical environment. At School Works we argue that the environment impacts on teaching, learning, the culture and management of a school and we seek to understand the inter-relationship between these 'hard' design and 'soft' educational issues.

Our work has identified three key ways in which the success of schools and the learning process is intimately connected to the design and maintenance of the built environment.

First, and crucially, a school building symbolises a set of values and acts as a metaphor for the ways in which society and the community value education. Secondly, environmental conditions have a direct impact on teaching and learning. Learning cannot be effective in hot, poorly lit or crowded conditions. A new curriculum with a focus on new technology cannot be delivered in an old, blackboard-oriented classroom. Thirdly and equally important, but less researched, are the indirect effects of the building. The design of a school affects the way pupils and staff interact, and their motivation and self-esteem. These factors in turn have an effect on learning.

Looking towards the future, we argue that connecting the design of school buildings to creative learning demands not only the current increase in capital spending, but a new approach to the way in which school buildings are procured, designed and constructed, and a new partnership between architects and educationalists in particular.

"...the success of schools is intimately connected to the design and maintenance of the built environment."

Participation and partnership are at the heart of our approach. School Works brings together professional expertise to test new ideas in practice with those who use, work and learn in school environments. Our project was designed through a series of workshops in inner London schools and the issues behind School Works were explored in depth with pupils, staff, parents, residents and governors at our first partner school, Kingsdale in South London.

An in-depth participatory process at the school, facilitated by an inter-disciplinary team, was organised on the premise that those who work in and use a school are the best source of relevant new ideas and creative solutions. The details of this work can be found on our website (www.school-works.org), and the School Works Tool Kit, which you can order on-line, provides a step-by-step guide to implementing a similar process. At Kingsdale the process resulted in a bold new educational vision and a set of architectural designs which have been awarded £7.5 million by the DfES. Many of the wider discoveries discussed in this pamphlet are also a product of this exploration.

Through this new, collaborative way of working, School Works is eroding the barriers between theory and practice, policy and implementation, thinking and doing. We argue that the removal of these barriers is crucial to the creation of new knowledge and solutions, and this pamphlet discusses some of the key ingredients for this new way of working.

The School Works project is itself a partnership. We have been developing our policy work in close collaboration with Demos and the Department for Education and Skills, and working with the Architecture Foundation, the New Economics Foundation and the Department for Trade and Industry's Movement for Innovation. This pamphlet shares the findings of our process and the discussions of a seminar series. It draws on the knowledge and expertise of our partners, extending the School Works debate and arguing for a new approach to school building. We would value any comments you may have. Please contact the team on mail@school-works.org.

Hilary Cottam
Director

This pamphlet aims to stimulate a debate about the built environment of the school in relation to its other dimensions – people, the learning process and the institutional framework. Previously, little attention has been paid to the built environment of the school because many people consider that schooling is largely about people – pupils, teachers, classroom assistants, governors, parents, civil servants and officials. The building is seen merely as a backdrop against which people educate or are educated and little thought has been given to the way in which the process of schooling and the physical environment in which it takes place are connected.

Buildings affect people – the way they feel, experience, learn, work and relate. Buildings support particular organisational forms and operational models. They communicate messages to those who use them, and those who look at them from the outside. It is also people who create buildings. The way they are designed is informed by a complex range of ideas and understandings: theories about structure, space, light and material; the particular aesthetic preferences, assumptions and creativity of the architect; educational theories and policies about teaching, learning and curriculum content. All these factors combine to influence the effectiveness of the school in terms of pupil behaviour and attainment, teacher performance and school-community relations. At its worst, the built environment can undermine the learning process, inhibit pupil attainment and damage pupil and staff well-being. At its best, it has the capacity to enhance the educational experience and transform the school as a learning organisation and workplace.

A greater priority for the architecture of secondary schools and an acknowledgement of its importance in supporting school effectiveness is needed. The current climate of intense debate about the future of education and the need for secondary schools to achieve higher standards is producing a growing recognition that we are in the early stages of a longer-term transition, which will lead to radical change in the way in which learning takes place in this country. Secondary schools today are working within a policy framework that has two overarching goals: to deliver a different and better education to their pupils, and to deliver education services to a wider community or client group. The success of the second depends on the reputation of the first. The possibilities of both depend partly on changing the form of school buildings.

After twenty years of under-investment, significant expenditure is now going into schools. Central government is increasing the level of funding for school buildings to £8.5 billion over the next three years, as much out of necessity as a desire to radically improve facilities for learning. This money is additional to that spent by local authorities, dioceses and schools out of their own budgets. Without this investment, many of our schools could present a serious threat to the health and safety of pupils and teachers. But it is still a far cry from the total amount needed to modernise our schools. Indeed, Ofsted has judged that a mere 3 per cent of secondary schools inspected in 1999-2000 had excellent or very good accommodation, with over a quarter having unsatisfactory or poor accommodation (Her Majesty's Chief Inspector of Schools Annual Report for 1999-2000). To date, most of this expenditure has been directed at repairs and is, therefore, backward facing. With the recognition that this approach is no longer tenable, the focus needs to shift to the longer term, to reflect broader changes in society and technology, and consequential further educational needs.

It is a timely moment in our history to ask how we can maximise the impact of the investment in school buildings, by designing, building, renovating and remodelling secondary schools so that they provide not only sufficient space and adequate conditions, but also inspirational places of learning which value pupils and teachers, and address the needs of the wider community. Investment in school buildings should form

part of the government's drive to raise achievement, and improve student behaviour in secondary schools. For schools to be able to deliver a different and better education to pupils and educational services to the wider community, we need a radically different approach to the process of building schools. The failure to integrate 'hard' design proposals with 'soft' changes in education and the culture of learning is one of the major obstacles limiting the possibility of real change. It is this issue that School Works seeks to address.

In particular, we challenge the idea that you can build a high quality, effective school for the future from a design brief written only by planners, LEA officials or a head teacher. The government needs to rethink the relationship between LEAs building clients), the architects and the people who actually teach and learn in our schools. We argue that school design should develop through a process of engagement between the education community (including pupils, parents and local residents) and the design community. This process should go beyond consultation, which invites stakeholders to react to preconceived design ideas. Rather the community should be involved in the initial creative process. A process of participation of this kind does not just result in better buildings; it can act as a catalyst for change within the school. It can empower people, encourage innovation and, ultimately, contribute to improved learning for all.

We must also recognise the need to invest in top quality architecture for our schools. The best architects in Britain should no longer be involved in designing private houses, trendy wine bars, corporate headquarters and public buildings of national importance. The best architects in Britain should also be involved in redesigning our schools. However, they need to engage with as many different groups within the school as possible if they are to understand and respond to the cultural symbolic meaning of the building. Only then can we ensure that our school buildings reflect the value and importance of the next generation of students and their educators.

The need is not for a single model or formula for good school buildings. Instead, we argue that finding the right solutions for a particular school requires an individual design response,

which should be based on an understanding of the specific needs of each school and of how the school would like to be in the future, in order to create an environment that enables the realisation of that vision.

The discussion that follows is necessarily wide-ranging and is intended to expose the complexity of this debate. In Chapter 1 we set the scene for the subsequent discussion by describing the secondary schools that exist today. In Chapter 2 we consider the transformations that are happening in society and their implications for the content, process and physical infrastructure of secondary schooling. We suggest that, while the world around the school, the people within it and the content of learning are undergoing dramatic change, the same can rarely be said for the physical form of secondary schools. The secondary school building of today silently holds in place a curriculum and approach to learning that is increasingly outmoded. Its institutional and custodial appearance deters access by the wider community. We argue that if we want a modern school that meets new educational, social and economic demands, we need school buildings that look and function very differently from the ones that we have built over the past hundred years.

Chapter 3 explores the ways in which buildings operate as symbols in modern society, the impact of the physical environment on performance and the impact of space on relationships and behaviour. Chapter 4 provides examples of some innovative secondary school buildings that seek to achieve this.

Chapter 5 turns to the process by which schools are designed and procured, and asks how we could do things differently in order to improve school buildings and the model of learning they support. We critique the current policy framework, arguing that the proliferation of guidelines and the procurement process itself act to stifle innovation. We consider the relationship between architects and clients, and suggest that better school design is likely to result from a more participatory approach to the development of the design brief, and more collaborative relationships between all partners in the design and construction process. Building on the arguments and conclusions set out in the preceding

"... we need school buildings that look and function very differently from the ones that we have built over the past hundred years."

chapters, we bring together our recommendations and proposals for change in Chapter 6.

These recommendations are:

1. Allocate up to 2 per cent of school capital investment for the participation of the whole school community in the design process.

2. School communities should replace Local Authorities as clients in major building projects.

3. De-regulate building guidelines, and share examples of good practice.

4. Integrate educational and building plans to produce cohesive school plans.

5. Integrate the lifetime costs of a building with initial capital investment.

6. Appoint architects for the quality of their designs and for their approach to engaging with the school community.

Whether you are an educator, an architect, a policymaker or simply concerned about the state of our education system, we hope this pamphlet challenges and provokes you to think about the built environment of the school, its importance and potential, in new and different ways.

Chapter 1: School Buildings in Britain Today

Most secondary schools in Britain today were built in one of two eras – either the latter part of the 19th century or the post-war era (1945 to 1975). Many contain elements of both, with original Victorian buildings and others added later, often in a haphazard fashion.

With their imposing, multi-storied buildings with solid brick exteriors, schools built in the 19th and early 20th century are instantly recognisable, even when they have been converted to other uses such as apartments. Inside, with their double-loaded internal corridors with doors leading into identical classrooms, they are an architectural metaphor for the industrial era. Built by philanthropists, charitable organisations, local school boards and the church, they were a response to concerns about child health and well being, literacy and numeracy, and the need to occupy and contain young children who were no longer allowed to work in factories and sweatshops. Secondary schools were the preserve of the middle class and the rich: for everyone else, schooling was basic and ended at the beginning of adolescence.

Though solidly and impressively built, Victorian schools often lack what are now essential facilities. Few were built with an entrance hall or a reception area to welcome people into the school. Many lack space for storage and have inadequate facilities for teaching specialist subjects. Heating, plumbing and toilet facilities are antiquated and often have to be replaced or maintained at great expense.

The second major period of building was in the post-war era. 200,000 new school places were required every year up until

1975 (Saint 1997). The passing of the 1944 Education Act (which guaranteed a secondary school place for all young people), the raising of the school leaving age and the post-war baby boom that continued through the 1950s generated an unprecedented and urgent demand for new primary and secondary schools. The number of war-damaged and defective buildings added to the problem.

Secondary schools built in the 1940s and 1950s were thus designed to meet the need for major expansion in the context of severely constrained resources. The over-riding concern was to provide sufficient space to accommodate pupils and get the basics of ventilation, lighting and temperature right. Many of these schools were prefabricated modularised structures, configured to fit the site on which they were rapidly erected with minimum manpower. Corridors were narrow, classrooms uniform, staff and administrative areas were cramped. Space savings were often made in non-teaching areas such as dining halls. Typically flat-roofed and built of steel, concrete, glass and asbestos, the exteriors of these schools pay homage to modernist architectural principles of smooth lines and minimalist detailing.

In the 1960s and 1970s, new joint facilities for sixth forms and adult education were added to existing schools and many secondary modern and grammar schools were combined to become new comprehensives. This was often done in a piecemeal fashion under pressure of time and with limited resources. The legacy is one of large schools comprised of rambling collections of buildings often linked by covered walkways. New schools built at this time reflected the prevailing modernist architectural style, which was characterised by an almost puritan restraint in the use of materials and modelling of external details (Hacker 1974; p24). While some of these schools won architectural awards, these same schools were also often criticised for failing to function effectively – not only as environments for teaching and learning, but also in terms of other considerations such as circulation, administration, maintenance and running costs.

Britain has not seen a substantial secondary school building programme since the mid 1970s. Indeed, over 90 per cent of current school buildings pre-date 1976. While Victorian schools

"...over 90 per cent of current school buildings pre-date 1976."

were built to last, the buildings from the 1950s to the 1970s were often only intended to last 30 to 40 years, yet many of these schools are still in use today. Many have weathered badly and are incredibly costly to maintain.

This poor state of the school building stock is compounded by the fact that, from the early 1980s to the late 1990s, there was substantial under-investment in school buildings from central government. The expectation was that local authorities would meet the cost of maintaining, improving or expanding their school building stock. In reality, school buildings were left to run down, were sold off to raise revenue or, in the case of grant-maintained schools, responsibility for addressing building needs was given to the governing body.

The DfES admits that over half the total school stock now in Britain is into its replacement period. These schools are *'increasingly expensive to maintain and operate and unsuitable for modern school use. Replacement or major refurbishment makes greater long term economic sense than continual repair of life-expired assets'* (DfEE (2000) Capital Investment Strategy 2001-2004). But the cost of replacing half of all school buildings would be around £33 billion, based on the DfES estimate that the replacement value of the total asset base of the maintained school sector in England is £66 billion.

Britain no longer faces the expansionist drive that dominated the school building programme of the post-war era. The current schools capital investment programme thus responds to maintenance and a number of new imperatives. These include:

— The need to replace and renew temporary, unsuitable and run-down buildings.

— The need to build new schools to meet increased pupil numbers in some areas, while rationalising school places in other areas.

— The need to modernise buildings to accommodate new technologies, changes in curriculum, lifelong and community learning and the greater diversity of provision within the secondary school system.

Chapter 2: Institutions Out of Place

In this chapter we argue that that we should not just be looking at the way that the built environment can help schools to meet the current agenda of improving performance and raising standards. We also need to think about the way in which the physical design of the school can enable and support schools to meet a completely new set of challenges and expectations.

Recent and emerging changes in the economy, labour market and society have significant implications for the role and function of secondary schools. The changes that are occurring in society and the labour market are underpinned by a number of key trends and developments. This chapter looks at these drivers and resulting changes, considers their implications for secondary schools and exposes the physical structures that hold schools back.

Secondary schools are hierarchical organisations where the flow of information is controlled, routines are standardised and significant emphasis is put on custodial care. The design of schools at once reflects and encourages this ethos: segregated, controlled spaces, which are policed in a variety of ways. The world beyond the school gates is by contrast complex and constantly changing, characterised by lack of control and democratic, horizontal organisational structures.

The inability of schools to reflect this world, either in their teaching or in the hidden curriculum, hinders learning. In the wider world, schools appear as institutions out of place, not as a resource at the hub of the communities that surround them. If secondary schools are to be modern places of learning and

"How can physical design enable schools to meet a completely new set of challenges and expectations?"

work, responsive to individual and community needs, then we need to move towards a new model of learning (Bentley 2000). This means re-thinking the organisation, process and content of learning. It also means thinking about the way in which these things are reflected in and supported by the built environment.

A Technology Rich Society

Information and Communication Technologies (ICT) are now an omnipresent feature in our lives and have transformed the way we communicate, work, access information and services, and use our leisure time. Technological literacy has joined numeracy and literacy as a key basic skill. If schools are to equip young people to succeed in a world of pervasive technology, then ICT needs to be integrated into all aspects of the learning environment. ICT has enormous implications for schooling: the way in which teachers teach and learners learn; the content of the curriculum; access to resources; security, administration and management systems.

Sophisticated educational software mean that the teacher is no longer the sole holder and imparter of knowledge. Their role is changed to one of facilitator, coach and assessor. ICT gives pupils ready and direct access to curriculum content, enables both independent research and collaborative projects, and allows them to present information in new and sophisticated ways. It also offers the potential for learning to take place anytime, anywhere, offering up the potential for the de-institutionalisation of education. It is notable that the number of pupils being schooled at home is growing year on year[1]. We are already seeing incipient forms of internet-based 'virtual' classrooms: the question remains as to whether these will supersede or exist alongside the institution of the school, as we currently know it.

"The contrast between the world of internet-based learning, and the physical environment of today's classrooms could not be greater."

The contrast between the self-directed, virtual world of internet-based learning, and the controlled physical environment of today's secondary school classroom could not be greater. Although the government is investing significant resources to 'wire-up' schools, the reality is that, all too often, computers are isolated in dedicated IT suites and staff offices

[1] There is no accurate figure for home schooling in the UK. Estimates range from 15,000 to 150,000. In the US it is estimated that over two million children learn at home (www.interhomeschool.com)

17

instead of being part of the learning resources found in every classroom. At the same time, 'Technology' continues to be taught as a separate timetabled subject instead of being an integral element of learning across the curriculum.

Where blackboards have been replaced by interactive whiteboards, exercise books by laptops, OHPs by Powerpoint, and textbooks by CD-ROMs, the relationship between teachers and pupils is constrained by the physical design of the classroom, and indeed of the school as a whole. The size and spatial layout of the classroom support a didactic approach to teaching, in which pupils are largely passive recipients of information communicated by the teacher who holds the knowledge and manages the pace at which pupils receive it.

There is a very great risk that without the appropriate changes and modifications to the physical environment, the enormous investment that is being made to equip schools with technology will fail to deliver the promised benefits to pupils. Lighting, temperature control, air quality, storage and security are often inadequate. Factors such as the location of wiring around the walls unduly influence how pupils learn. Inappropriate furniture and fittings don't enable effective use of computers, or fail to ensure that they're protected from accidental and intentional damage.

So how might the design of schools change to support the integration of ICT and enable teachers and learners to maximise its potential? Some of the minor and more substantial changes that need to be considered include:

— Integrating technology – whiteboards, ceiling mounted projectors, computers, plasma screens – into the design of the space.

— Designing space that is flexible enough for a range of learning activities to take place including PC-based learning, video links, distance teaching, interactive debate within and beyond the school.

— Creating spaces that can be adapted to meet the demands of new technologies and pedagogies, and changing curriculum and community needs.

— Providing adequate, secure space in or close to classrooms, to store resources and pupils' ongoing project work.

— Designing the physical environment so that disruption to learning, and the time and money required for maintenance of space and equipment, are minimised.

We also need to look at how school design might ensure that the wider community can access the learning opportunities and resources that are contained within the school. Most school buildings are currently used for about 13 per cent of the total year. This is not only enormously wasteful, it also fails to address the increasing demand for access to learning resources by the wider community.

A Lifelong Learning Society

Schools have two key roles to play in creating a lifelong learning society. They need to provide the foundation of skills and abilities to enable students to continue learning over their lifetime, and they need to widen learning opportunities by opening their doors to people beyond school age.

We live in a world where knowledge has taken over from capital as the most valuable resource and the driver of economic growth. People need to be knowledge-rich, skilled, creative and adaptable in order to survive in a world where new ideas, products and services emerge as quickly as old ones disappear. We all need to be lifelong learners who are able to learn, un-learn and re-learn throughout our lives. In other words, the skills and capacity for learning have become just as important as the content of learning.

Schools need to reinvent themselves as hubs of learning networks, linking learning across a range of sites, including homes, workplaces and community organisations (Bentley 1998). This requires them to reach out into these places, something that ICT makes increasingly possible. It also requires schools to draw people in. At present the appearance of many secondary schools is hostile to outsiders. They are enclosed by high walls or fences that, while necessary to protect property,

staff and pupils from harm, also serve to act as a physical barrier between the school and the surrounding community. These problems are often compounded by other design characteristics, such as poor signage, inadequate reception areas and visitor facilities. Few secondary schools have designated spaces for parents or community members.

If we are to recreate schools as a focus of lifelong learning, then we need to consider how to open up the school as a physical space. This means designing schools that look inviting rather than foreboding. This may involve moving public amenities like sports halls and libraries to the ground floor or perimeter boundaries, where they can be easily accessed. It means a shift away from the impersonal and institutional architecture of schools towards the principles of design that characterise places such as public sports facilities, leisure centres, bookshops, internet cafes, libraries (like the new Peckham library in London) and cinemas. It means opening up spaces visually, so that people can see others learning, thereby creating the possibility for passive surveillance and reducing the need for more oppressive forms of security. Creating an effective entrance can make an enormous difference in people's sense of welcome and perception of the school. As well as acting as a gateway into the building, it can also share information about the school, staff and student achievements with parents and the public.

Flexible Work in Well Designed Spaces

The move to a knowledge economy has been accompanied by changes in the labour market and different working practices. There are few 'jobs for life' anymore, and increasing numbers of people in the labour market are self-employed, freelance or employed on a fixed term contract basis.

Workplaces are also changing. They are less segmented and hierarchical, and are increasingly characterised by more fluid and flexible organisational structures, teamwork and networking. Employers are also increasingly recognising the need to create a physical environment that supports these new arrangements. New office design focuses on providing flexible spaces that encourage collaboration and creativity, and

"Creating an effective entrance can make an enormous difference in people's perception of the school."

informal spaces that encourage interaction and communication. Employers are also recognising the benefits of providing high quality facilities that attract and motivate staff and make them feel valued. Technology and design combine to enable greater flexibility and to break down traditional divisions (Worpole 2000; p32).

Changes in the labour market and workplace have also resulted in greater value placed on a wider range of intelligences (Gardner 1993), skills and abilities. To survive and thrive in this dynamic labour market, today's school leavers need 'enterprise' skills – interpersonal, decision-making, organisational, personal responsibility, creativity, and evaluative skills (Horne 2000). Our education system, on the other hand, continues to use styles of learning and assessment that are heavily biased towards traditional ideas about intelligence, which are narrowly focused on linguistic and logical-quantitative intelligence. As a result, schools fail to engage many young people or fully develop their range of abilities.

Organisationally and physically, secondary schools bear little resemblance to other 'knowledge industries' in the public and private sector. They have strong institutional hierarchies – at the apex of the hierarchy is the head teacher, followed by the deputy heads, heads of department, heads of year, subject heads, head boys and girls, and prefects. Office space and access to technology is often allocated on the basis of these hierarchies. People, space and knowledge are usually divided up into departments, which are organised around different disciplines. Subjects are delivered in timetabled chunks that structure the school day, and there is little cross-curricular learning. Classrooms separate teachers from one another, with little opportunity to collaborate, exchange ideas and observe each other's practice. Whereas many workplaces (and primary schools) have been humanised with things usually seen in homes – soft furnishings, plants, kitchen facilities and space for personal belongings – some secondary schools lack even the most basic facilities, such as decent toilets, staff rooms and dining facilities.

It seems that secondary schools have yet to fully recognise the extent to which the design and condition of the physical environment can contribute to a sense of organisational

identity, common purpose and improved productivity. School Works argues that in designing secondary schools, we should look to other sectors and organisations that deal in knowledge and creativity and take inspiration from recent initiatives in the design of workplaces. Some of the design features we might take on board include:

— The provision of a range of creative, stimulating, differentiated learning environments – small-scale spaces for individual or small group work, private meetings and time out for disruptive pupils, and large adaptable spaces for workshops, lectures and rehearsals.

— The provision of designated teaching spaces, but enabling such space to be adapted for different activities and ways of learning.

— The provision of a 'base' for pupils and staff. For pupils this might be a desk or a locker that they can personalise; for teachers it might be a workspace or workstation, as well as paperless non-work spaces in which they can relax.

— Minimising areas that are designed for circulation only, and creating transitional spaces (similar to atriums, town squares and shopping malls) that encourage positive social interaction such as impromptu meetings, conversation and sharing of information and ideas.

— The provision of a range of open and discrete spaces where pupils can eat, relax, talk, play, read etc, and display and performance areas for art, drama, music and project work, to enable assessment of pupil work and sharing of individual achievements with a wider audience.

— The creation of spaces which foster a sense of belonging and inner school community. One example of this is the way in which team or house systems and spatial distinctions can help to decentralise large schools.

"...we should take inspiration from recent initiatives in the design of workplaces."

One issue that needs to be debated is whether schools still need spaces called 'classrooms' and more specialised spaces,

such as laboratories and workshops. The development of more portable technology may mean that teachers and pupils can learn all subjects – including the more specialist and 'hands-on' ones – in flexible learning spaces or, indeed, anywhere in the school. Of course, specialist environments are required for some activities, such as science, music and catering.

A More Open and Diverse Society

Social roles, systems, rules and boundaries are being modified in response to changes in technology, the economy and the labour market. Other changes, such as the growth of multiculturalism and individualism have resulted in more complex notions of identity. The mass media and ICT expose people to a wider range of cultures and sub-cultures than ever before. The traditional nuclear family, previously held up as the 'building block of society', is no longer the norm. There are an increasing number of births outside marriage, more frequent cohabitation between non-married couples, more divorce and reconstituted families. With longer periods of participation in education and training, young people are economically dependent on their families for longer, yet often want to assert their independence.

In this diverse world, institutions struggle to generate shared values, mutual understanding and respect, which are important for creating social cohesion. Governments, employers and families are increasingly looking to the school to transmit the values and aptitudes for civil, political and social 'citizenship' (Jones and Wallace 1992). Schools are being asked to celebrate difference, but also reinforce a sense of individual and national identity. The school as a building needs to embody these values, even if just in small ways, such as displays of individual work, signage that reflects cultural diversity or artwork that celebrates common values, local or national identity.

"...school buildings need to embody difference, but also reinforce a sense of individual and national identity."

Young people are also facing increasing pressure to achieve and succeed, and the implications of failure are ever more serious. Levels of achievement at school are strongly predictive of teenage pregnancy, drug use, youth suicide, truancy and exclusion (Social Exclusion Report on Teenage Pregnancy 1999

and School Exclusion 1998). The government is demanding that schools widen the range of learning opportunities by delivering both broader and more specialised learning programmes that recognise and respond to varied needs, interests and abilities.

Schools have a role in preventing disaffection, not only by raising attainment, but also by meeting the personal and welfare needs of students and equipping them to cope with the pressures, complexities and uncertainties of life. The need to provide improved pastoral support has been recognised by government, through the introduction of new initiatives such as Excellence in Cities and the Connexions Strategy.

There is, however, a tension between this caring, supportive and inclusive role, and the 'custodial' role of secondary schools. Teenagers who are not in school are regarded as being potential victims or perpetrators of crime and anti-social behaviour. As a result we contain and segregate them from the rest of society. Even within the school, there is a strong element of control and supervision. The timetable and the school bell regulate the way in which pupils use their time. Although pupils are expected to manage their own time and behaviour during breaks and lunchtimes, this is still done within the limitations established by the school's rules and physical boundaries.

The design of schools needs to somehow respond to these many and often conflicting roles. One of the biggest challenges that educators and architects face is to try and create a physical environment that inspires and excites young people and gives them a sense of belonging within their school. Architects and educators should look at the activities and places that do successfully engage young people, and consider ways of integrating features from these places into school design. They might look, for example, to the growing 'edutainment' sector, which attempts to capture the motivational elements of entertainment for learning purposes. They might also look to Further Education colleges and community education organisations such as Saturday schools, sports clubs and homework clubs, where pupils take responsibility for their learning and participate voluntarily and enthusiastically.

Perhaps the best place to start is to ask young people themselves. If we design schools with input from young people, then it is more likely that they will feel a sense of ownership and belonging in those schools. They are more likely to want to attend school, to respect the building and achieve. While this may seem obvious, such pupil involvement happens all too rarely. Pupils are one of the key clients for school architecture, yet more often than not are excluded from the design process. We explore the issues within the current client structure in greater depth in Chapter 5.

Chapter 3: Buildings as Frames for Life

This chapter examines the complex relationships between buildings and people. It begins by exploring the symbolic power of school buildings and the significance this has for the teachers and students who use them. The condition of most of our school buildings is a reflection of the low status we ascribe to teachers and young people. This tangible symbol of our commitment to education and the message is not lost on students (Moore 1995).

This chapter explains how the environmental conditions within and around the building affect the process of learning. Factors like lighting, heating, acoustics and hydration all affect student and teacher performance. We will argue that the current regulatory framework fails in its central objective of assuring the basic environmental quality of classrooms.

The final part of this chapter explores the connection between buildings and the relationships between people. We argue that the design of the school has a discernable effect on the sense of belonging felt by teachers and students, it can effect the way in which staff interact with each other and with students, and can also have an impact on student behaviour, as well as on the relationship between the school and its wider community.

Building Symbols

It is important to understand the built environment not just as an objective, quantifiable entity, but as a subjective perceived environment where meaning is ascribed to physical forms. The

cultural image of any institution like a parliament, a prison, a school or a church is strongly connected with a visual image of the institution's built form. Buildings symbolise not just the role of that institution in society, but also the importance of the people who work there. Thus school buildings symbolise certain qualities, values, aspirations and experiences (Duke 1998) and differing levels of success in education are symbolised by differences in architectural style and quality. To understand this, we have only to compare the Oxbridge colleges with former polytechnics, and public schools with most post-war modernist inner-city comprehensives. Each of these buildings conveys a socially constructed message of varying levels of success, importance and value, even if the messages are wholly misconceived.

The traditional high-rise inner-city Victorian school effectively conveyed the message that educators were people with authority. To be educated was to be subject to the authority of the school. The building dominated the local community like the teacher dominated the pupil. Schools built in the post-war period conveyed the message that a modern education and modern building technology could rebuild the economy and society damaged by war. Schools in their modernism were to be indistinguishable from office blocks, factories or other civic architecture. This uniform impersonal image is consonant with the ideals of a new egalitarian classless society forged from common effort.

Officials appear to be ambivalent about the role our school buildings play in developing self-esteem and pride among students and staff. Too often they prioritise financial cost over the cultural importance of school buildings. Yet the expressive meaning of school buildings is of enormous importance because of the effect it has on people's sense of who they are, and their self-esteem. Unattractive, poorly maintained schools can make students feel less valued (Duke 1998) and affect staff retention. Research shows that self-esteem is hugely important in determining future success, especially for students from economically disadvantaged family backgrounds (Coleman 2001). Indeed, self-esteem is as important as social class and cognitive ability in determining an individual's future success (Ibid).

"...the expressive meaning of school buildings affects people's sense of who they are, and their self-esteem."

The links between built form, self esteem and learning outcomes have been clearly articulated by participants at School Works seminars and workshops. Teachers at Kingsdale expressed quite clearly how they felt frustrated at the implicit assumption that only poor quality teachers work in run down 'sink' schools. Staff felt that the poor state of the building gave a bad impression of the school to the local community, detracting from the many successes and achievements of students and staff. We found that the contrast in architecture between an inner-city comprehensive and a neighbouring public school acted as a metaphor for the different social backgrounds of the students, the different educational opportunities available at school, the different levels of achievement, and the different economic and learning prospects of these two groups.

Aspects of the built environment in schools like Kingsdale can trap individuals into particular patterns of expectations, institutional structures, individual and group behaviours and relationships. These in turn, can act as obstacles to change and improvement within schools. Thus, the educational and organisational changes that are so necessary can be almost impossible to achieve without corresponding changes to the physical environment in which they are located. It is hoped that the investment in the school buildings at Kingsdale, and schools like it, will be a visible symbol to the wider public of the confidence and value placed in the staff and students of the school, who are working in difficult circumstances.

People who share common cultural backgrounds and values perceive their environment in similar ways (Duke 1998). This means that gender, social class or age explain some of the differences in the way people perceive the architecture of the school. For example, children are more affected by the built environment than adults and as a result design improvements have a bigger affect on students than teachers (Altman and Wohlwill 1978). There are also differences in response to the built environment on the basis of gender and social class around issues of privacy, seclusion and personal space (Meek 1995). It is important that architects take into account the different attitudes of boys and girls, younger and older students, and different ethnic groups when they work with members of the school community.

The symbolic meaning of buildings is particularly salient to vulnerable children (Bettleheim 1974 cited Weinstein and David 1987). Small physical details like the graffiti, school signage, the condition of the fabric of the building, displays of student work and even the quality of the toilet paper, are seen by a child with emotional or behavioural difficulties as an indication of how much their school values them as an individual. At Kingsdale we worked extensively with students with emotional and behavioural difficulties. We found that individuals within this group have their own unique reactions to architecture due to their own particular experiences. As a result it is not possible to prescribe suitable building environments to specific social groups. Instead it is absolutely crucial that as many people as possible are engaged in the design or re-design of the school and that the participatory process of design explores personal and group issues when meeting the needs of the users and potential users of the building.

Creating the Right Environment

In our work in secondary schools we at School Works found that examination results correlate with physical teaching conditions. Within Kingsdale School we found that the classrooms in departments with outstanding examination success were in better condition than those rooms found in departments that were under performing. The music department, for example, is one of the most successful in the local authority. It is located in a modern building situated away from the older main building. The outstanding art department benefits from being well lit and quietly secluded at the top of the school away from the extensive internal corridor system. The carpeted refurbished, well-lit, quiet library was an oasis of independent learning for students and teachers alike. Clearly, there is a strong interaction between outstanding teaching and creating the right physical environment. These improved physical environments facilitated outstanding teaching, and helped attract and retain top quality teachers in those departments.

Our qualitative findings are supported by academic research that has measured the effects of environmental conditions on

learning and, more specifically, on examination results. Researchers have found that those schools with poor environmental conditions have lower examination results than schools in good condition, even when they have taken the family background of the students into account (Edwards 1992, Cash 1993). A conservative estimate has shown that good quality buildings improve examination results by 5 per cent. Some studies have shown that examination results in schools with good building conditions are on average 17 per cent higher when compared to similar schools (Ibid). Environmental psychologists have been able to show that temperature (McGuffey 1982), light levels (Peyton 1999), air quality (Andrew and Neuroth 1988), noise levels (Duke 1998) and acoustics (Mackenzie and Airey 1999) all have a measurable effect on individual performance. Air quality, for example, affects pupils' attention spans and alertness, (Ornstein 1994), naturally well-lit classrooms are related to greater concentration (Nicklas and Bailey 1996), cold conditions are linked to low levels of learning, and unwanted noise reduces work effectiveness (McGuffey 1982).

Environmental conditions affect teachers as well as learners. A classroom in which the conditions are deleterious can hamper the efforts of even the best teachers. Because all teachers are assessed by the same OFSTED criteria, and their pupils are assessed by the same standardised tests, it becomes necessary for both teachers and students at schools like Kingsdale to work harder to achieve the same results as elsewhere. Thus teachers are placed in a double bind situation: not only is their own performance impeded but they have to try and compensate for their student's impeded performance. There is convincing empirical research to demonstrate the compound negative effects of working in such buildings on teacher stress, sickness, job satisfaction, absenteeism and staff turnover (Corcoran et al 1988). This is supported by our work at Kingsdale, where we found a strong link between the teachers' attitude to their workspace and to their work in general. Many of the teachers working in the worst conditions in the school expressed the greatest concern about job-satisfaction and stress.

"...schools with poor environmental conditions have lower examination results than schools in a good condition."

It is clear that environmental conditions are an extremely important factor in improving teaching and learning and

raising examination performance in some of our most difficult schools. In the current political climate, an improvement in exam results of as little as 5 per cent, achieved simply by improving classroom conditions, is highly significant. For example, it could be enough to affect the decision to close and re-open a school under the Government's Fresh Start initiative. Alternatively, for a 16 year old school-leaver it could make the difference between a C and D grade at GCSE, and affect their prospects in further education or employment.

Building Relationships

We have discussed how the symbolic quality of buildings and the environmental conditions prevailing within them can affect the individual performance of students and teachers. We now look at the ways in which the configuration of space can influence relationships between people.

As we found at Kingsdale, many of the schools built in the post war period no longer achieve the goals of maximising effective professional relationships, creating cohesive student groups, and facilitating positive community relations. Architects should seek to produce designs that foster better relationships between different groups in the school (e.g. pastoral groups, year groups and teaching departments). This means giving as much emphasis to the social and organisational dimensions of the school as is given to the environmental, technical and curriculum requirements. It will also involve working in partnership with other professionals, such as educationalists and psychologists. Architects should aim to produce designs that discourage and prevent poor student behaviour but encourage and facilitate community use. They should see their role as one of creating buildings that play a part in shaping organisations and regenerating communities.

The Student Community

It takes more than a school song, uniform and motto to create a school community. It requires a sense of place that reinforces collective identity. Communities can of course come together both in the virtual and the real world. In the successful school community of the future, school buildings must enable members of the community to do both.

"It takes more than a school song, uniform and motto to create a school community."

During our work at Kingsdale School, it became clear that the configuration of space within the school affected the formation of social groups and the students' sense of belonging. For instance, the provision of special dining facilities for girls (who were outnumbered 4 to 1 by boys) and year 7 pupils was an effective way of creating positive group identities and encouraging good behaviour. More often than not, poor student behaviour was found in spaces not dedicated to specific groups, such as the corridors and the main dining room. In other secondary schools, a Sixth Form common room is a good example of a way of creating an identity for a group of students. The strict exclusion of younger students and the superior quality of sixth formers' space, where they can relax and socialise, confers on sixth formers a unique degree of independence and authority within the student body of the school.

The design of space affects the way groups of students develop identities. An important part of the proposed changes at Kingsdale is the introduction of a house system that creates the potential of peer mentoring and greater integration between year groups. These 'houses' are pastoral groups, bringing together students from different age groups who share separate social space and social activity in the school. By giving each house a defined space, a sense of membership and belonging is forged. However, to prevent unwanted rivalry between student groups, certain measures need to be in place to integrate these groups and spaces into the whole school. It is necessary to integrate members of both vertical age groups (houses) and horizontal age groups (years) with the whole school and create a universal school community through the provision of whole school spaces.

In secondary schools where poor student behaviour predominates, pupils often feel they do not have a sense of belonging either to a place or to a particular pro-social group within the school. They live a nomadic existence, carrying their belongings from place to place. At Kingsdale, as in many other schools, the students had to carry everything with them at all times. It was a common sight to see them eating lunch at the dinner table with their coats and bags on their backs. An unfortunate result of this was that many students stopped bringing bags to school altogether, which meant that they

arrived without books or equipment. The situation in secondary schools is often in stark contrast to the experience of primary schools where pupils develop strong associations with their class, their class teacher, their classroom, and their own workspace.

The Teaching Community

The strongest group identity amongst staff in most secondary schools is that of the Department: a group of teachers and support staff who are all interested in a specialist area of the curriculum and share the same teaching rooms and office space. In many successful schools, the staff room is also a vital and dynamic space where staff can meet on a daily basis and share their experiences and knowledge. Indeed, the staff room is often the only working space that facilitates interdisciplinary work between the departments of a traditional secondary school.

Despite the importance of the staff room as a collective, knowledge-sharing space within the school, too little consideration is given to its design. Particular issues arise in most secondary schools because the staff room operates as a meeting room, a dining room, workspace, storeroom, a place for visitors and parents, a post room and notice board. Indeed, DfES building guidelines anticipate that the school staff room is to be used 'for meetings, refreshment, relaxation, lesson preparation, assessment and recording (DfEE 1996). This was the case at Kingsdale where professional knowledge sharing took place in a physical environment that was trying to do too many things at once. Most schools lack adequate provision of a professional workspace that is dedicated to interdisciplinary knowledge sharing, or the discussion of student welfare and behavioural issues. To expect so much from one poorly furnished room is disrespectful to the professionalism of teachers. While it may be cheaper to use this space in a multitude of ways, the staff room may fail to perform any of these functions effectively. Sadly, given the financial constraints placed on school budgets, and the prioritisation of learning outcomes above all else, few schools are prepared to invest in the working environment of their most valuable asset: their staff.

"To expect so much from one poorly furnished staff room is disrespectful to the professionalism of teachers."

Student Behaviour

The design of space affects pupil behaviour. At schools like Kingsdale, the design of internal space in the school creates many opportunities for students to avoid lessons with relative ease. Like many other secondary schools, Kingsdale has installed CCTV to monitor internal spaces that are not overlooked by classrooms or offices. They also employ dedicated staff to patrol these spaces during lesson time to increase attendance.

Schools spend thousands of pounds a year repainting walls covered in graffiti, patrolling hidden areas, installing CCTV inside the school, and expect hundreds of pupils to travel en masse along narrow corridors six times a day. The cost to teachers' time spent dealing with avoidable pupil disruption in part caused by the building and its design, is currently incalculable. The cost to the system of potentially avoidable pupil exclusion, and the resultant demand on Pupil Referral Units and in-school Learning Support Units is huge.

The money spent by schools on internal security could be reduced dramatically by thoughtful creative design. For example, creating open spaces, minimising hidden spaces, and putting internal windows in doors and offices all facilitate passive surveillance not just by staff, but also by other pupils and visitors. However, passive surveillance isn't just created by increased visibility, but by visibility in controllable spaces. The corridors at Kingsdale had sight lines that were so long that a teacher at one end could not control the behaviour of students at the other. The long-term cost of trying to treat the symptoms of poor design, rather than investing in preventative design from the outset, has a potentially debilitating affect on a school's ability to prioritise learning and achievement over control, discipline and behaviour.

School Buildings in the Wider Community

The built environment not only affects the relations between internal groups within the school but also the relationship between the school and the wider community. While many schools try hard to serve their local community, too often the grand imposing architecture of any institution, including schools, can act as a barrier to community use. This is especially

"...schools expect hundreds of pupils to travel en masse along narrow corridors six times a day."

true for schools in communities that do not have a history of engaging with formal learning.

There has been a recent growth, especially in prosperous neighbourhoods, in the profitable leasing of school buildings and grounds for sports and other activities. However, there has been a conspicuous failure of many schools to provide facilities like libraries, computer terminals and meeting rooms on a non-profit basis since the introduction of delegated budgeting in schools (as discussed at School Works Seminars on school design and the community). Indeed, one of the key challenges for PFI (Private Finance Initiative) is to create incentive structures for PFI companies to lease certain facilities to community groups and individuals who cannot afford to pay.

The interface between the school and the community needs to be addressed in organisational and design terms to ensure adequate access to the school by members of the community and to provide a safe environment for pupils. The increased threat of unwanted intruders and dangerous weapons in schools in the UK has resulted in an increased investment in external school security: entry phones, CCTV and high impenetrable fences. It is clear that student and teacher safety are paramount, but invisible design can often be as effective as investment in high security technology. For example, limiting the number of external doors and locating the building on the perimeter of the site reduces the need for high fences at a distance from the school. School Works welcomes the investment in school security, but questions how the money is spent. Schools should be secure and controlled environments similar to high street banks, theatres and post offices, rather than prisons, secure units or army camps.

"Schools should be secure and controlled environments similar to high street banks, rather than prisons."

Many of the design ideas and features mentioned in the previous chapters may sound quite radical or expensive. Others probably seem relatively minor and more like straightforward common sense. Greater attention needs to be paid to both. Small adaptations and creative design solutions within existing structures can make a big difference to how schools work.

As well as thinking more carefully about the details, we also need to think more creatively about the big picture. We need to be willing to innovate and take risks, to radically rethink the way our schools look and operate. Architects and educationalists in many countries are working together to experiment with dramatic new ways of designing the spaces and structures for learning. This chapter presents a few examples, which illustrate how the design features referred to in previous chapters are being put into practice in new and existing schools. None of these examples attempts to construct a single model for school design, rather they serve to illustrate a variety of models that should be developed and strengthened and which offer the potential of a range of appropriate outcomes for individual schools.

Britain

School Works have led a project to redesign a secondary school in South London. The design options were developed through a participatory process involving all members of the school community, including teachers, parents, students and administrative and catering staff, working with architects

chosen through an international competition and an interdisciplinary professional team.

Kingsdale School faces many of the challenges of an inner-city comprehensive located in a borough that features high levels of social and economic deprivation. These include a high proportion of pupils with special education needs (particularly emotional and behavioural difficulties), high pupil turnover, and many pupils who are refugees or who speak English as an additional language. Most pupils do not live in the local community but travel by bus or train, often from the neighbouring borough. Year 7 pupils are drawn from over 60 primary schools.

The school has many strengths. These include the rich cultural diversity of the student body, a strong music community, outstanding success in the arts, its location in a green and spacious environment, and its committed and hard working teachers. It is a multi-media school and has introduced a digital curriculum.

The school was designed and built in the late 1950s and is an award-winning example of modernist architecture. As with many schools today, the buildings have suffered from a lack of capital investment in preventative maintenance. There are many positive features to the buildings, but overall they fail to meet the needs of current pupils, staff and the wider school community. Particular issues include: long narrow corridors, poor condition of the fabric, inadequate dining space, lack of space for social and cultural activities, an inadequate entrance and reception area, poor environmental conditions in the classrooms, and toilets that are poorly ventilated and in bad repair. In addition, the current space configuration creates a very real barrier to the school realising its vision of becoming a non-selective centre of educational excellence, delivering a vocational curriculum and serving the whole community.

"There has been an attempt to link 'hard' changes in the built environment to 'soft' changes in the culture, organisation and curriculum of the school."

The design approved for funding by the DfES addresses the key needs identified through the School Works participatory process, many of which would not have been apparent without the creative involvement of pupils and staff. In particular, this has involved a deliberate attempt to link 'hard' changes in the built environment to 'soft' changes in the

culture, organisation and curriculum of the school. These changes include better circulation, a new school identity and culture, enhancement and extension of the curriculum, and the reorganisation and development of the management structures. They are also intended to reduce maintenance and running costs and achieve energy efficiencies.

The redesigned school provides space for individual and group learning. Classroom lighting and décor will be improved and classrooms will be opened up through the insertion of windows in all doors. Access to technology will be improved for both pupils and teachers. The library and ICT areas will be moved to the ground floor to enable better community access. The staff room will be moved to a quiet, central area of the school, making it more accessible to teachers.

Existing corridors will be replaced by a large central circulation space. This will reduce congestion, encourage positive social interaction and enable better passive surveillance of pupil behaviour. Pupil lockers, seating and display areas will be grouped in visible areas along wide galleried walkways. This is intended to reduce the sense of transience that pupils feel while in the school. The dining area will be improved and meals will be ordered via smart card technology. Smart cards will also be used to enable access to areas that are currently restricted, such as computer labs and the library.

A new entrance and clear signage will welcome staff, pupils and visitors. An induction programme for new pupils will accompany these changes. A 'house' system is being established to create smaller groups within the large student body. Each house will have a spatial location in the school. Pastoral care will be integrated into the house system. These measures are intended to create a sense of belonging and improve relations amongst pupils, and between staff and pupils. An under-used central courtyard will be covered with a canopy to form a new central space that can be used for many functions: circulation, informal social interaction, seating, performance venue, assembly, exhibitions, conferences and space for learning activities.

At Kingsdale the school community will continue to participate in ongoing monitoring of the effects of these

architectural changes, both large and small, on the new educational vision and learning outcomes.

The Netherlands

In the mid-1990s, Dutch curriculum authorities wanted to respond to criticisms from employers that young people were leaving school without basic workplace competencies (such as the ability to work in teams, solve problems, organise their own workload and work with limited supervision). Rather than taking the usual approach of adapting the existing school curriculum to achieve new competency objectives, they decided that both teachers and learners needed a physical environment that was conceptually different to the traditional classroom.

Dutch authorities introduced a new pedagogical approach across all subjects, supported by a new form of 'learning architecture'. This new model of learning is called the Study House and became mandatory in August 1999. It is characterised by attention to common skills in learning, research and reflection. There are no longer a fixed number of weekly lessons per subject, but a specified number of study hours for each subject. Teachers determine how these hours are distributed over individual study, group work workshops, plenary sessions, and lectures.

For two hours every day pupils work in the Study House room on all curricula and subjects, but according to their own priorities. They can choose to work in teams, as individuals or in the traditional class group if the whole class agrees with this. Teachers act as facilitators and students have access to computers, the Internet and other resource materials as needed.

"...authorities introduced a new pedagogical approach across all subjects, supported by a new form of 'learning architecture'."

Curriculum designers worked with teachers and students to develop and evaluate different designs that would support this new pedagogy. The model they arrived at was a large open space which incorporated clusters of seating, individual workstations, computers connected to the Internet, printers and scanners, discussion areas, project team areas and display areas.

The United States

Lake Orion High School is a new high school built to accommodate 1600 students. Because the school is also intended to function as a community centre, all facilities such as the auditorium, gymnasium and swimming pool are accessible from the main entrance, and public access is separated from student access.

The traditional school library has been re-conceptualised as a decentralised reading room and group research activity centre. A media centre has been co-located with studio classrooms, science and technical laboratories to create a high-tech resource centre that supports the integration of critical thinking, research and technical skills.

The student body is divided into four 'houses', each with 400 students. These function independently. Each house has its own classrooms, computer rooms, research areas, student lockers and faculty lockers. Two large group instruction rooms are available for lectures and presentations to groups of up to 80 people. They can also be combined to accommodate up to twice that number. The four houses are located adjacent to the centralised student services (administration) area and student common space which doubles as a dining hall.

Edmonds-Woodway High School is a new school with the capacity for 1600 students. To encourage community links, the school is conceived of as a 'village'. This village typology is used to inform organisational arrangements in the school. The various programme areas are conceived of as 'neighbourhoods' and organised into clusters of spaces. They include eight learning clusters, a theatre/arts cluster, administration and counselling suites, library and media centre, and a physical education cluster. Each learning cluster is designed as a base for 150-200 students and 7-8 teachers. It is comprised of four flexible classrooms, two laboratories, a shared teachers' preparation space, a conference room and a storage room, all grouped around a daylight-lit 'flex-area'.

"...the school is intended to function as a community centre, so public access is separated from student access."

"To encourage community links, the school is conceived of as a 'village'."

Buildings are grouped around two central spaces, the Great Hall (which serves as a multi-purpose space, student commons room, dining area and music performance space) and a central

courtyard (which serves as a an outdoor student and community gathering space). A two-story galleria functions as a north-south circulation spine, or 'main street' of the village and provides access to each of the neighbourhoods to the east and west.

The infrastructure of the school is designed to adapt and evolve over time in response to developments in the curriculum and technology. Electrical systems are accessible and allow for extra capacity, and storage is designed in moveable modules.

The school has a partnership with the neighbouring hospital that shares learning areas and recreational facilities for evening rehabilitation classes, has joint use of the car park and uses the school for conferences. Local arts groups use the school facilities for performances and as a display space. As with the School Works project, these features resulted from a design process with a high degree of community involvement.

These are just a few examples of exciting new approaches and design elements in school architecture. While there are many more examples of innovative school buildings in the UK and abroad, the reality is that for the most part, secondary schools continue to be built and refurbished in much the same way as they have for many decades.

In the next chapter we look at current policy, regulatory and funding arrangements and some of the constraints on innovation in school architecture, and begin to put forward an alternative approach.

Chapter 5: Partnership and Participation

The previous chapters have established the way in which the built environment affects learning, teaching and the organisation of secondary schooling. We have pointed out that the physical form of secondary schools has remained largely unchanged, while the world around the school and the content of learning are undergoing continuous transformation. We have argued that the built environment of secondary schools is a symbolic and physical representation of its traditional role as a hierarchical and remote institution delivering standardised services to young people whom society is seeking to contain and segregate from the wider community.

It is clear that if we are to create successful secondary schools that meet the new demands of the modern economy and diverse society, we need to redesign the environment in which learning takes place.

The key question now is how to incorporate the ideas and innovative approaches presented in these chapters to bring a new form of school architecture into being. Can we design different kinds of schools in the same way that we always have? This chapter will argue that we cannot, and that we need to change the process for designing schools as well as the design of the school itself. It describes and critiques the practice and policy that frames the way we design schools, and sets the scene for a new approach to school architecture.

"Can we design different kinds of schools in the same ways we always have?"

The Current Framework and Process for Designing School Buildings

The Client Structure

Most secondary schools in England receive the bulk of their capital and operational funding from their Local Education Authority (LEA). The LEA is responsible for ensuring that schools have sufficient capacity to accommodate all pupils, and for ensuring that premises meet the requirements prescribed in building regulations and health and safety legislation. In the case of community schools, the LEA also owns the school land and buildings. Within this framework, the LEA, rather than the users of the school, is the client for any architectural and constructional changes to the property. The structure in Private Finance Initiative Projects is different, and is explained later in this section.

One of the key roles of the client is to develop the design brief that guides the architect in his or her work. The design brief sets out the scope and purpose of the new or renovated buildings, the particular issues and needs to be addressed, and the parameters and restrictions on the designs. It provides particulars about the school, such as curriculum requirements, a profile of staff and pupils, and information about the existing site and buildings.

A good design brief does more than just present facts, figures and requirements: it also clearly articulates the vision for the school and its underlying values and philosophy, so that the architect can reflect and embody these within their designs. To write such a brief, the client needs a clear understanding of the needs and aspirations of the school and its community, and to be able to articulate what these might mean for the design of the building. This is a difficult task at the best of times, but is made all the more difficult when – as is the case with most school buildings – the people that commission and develop the specifications for the project are not the same as the people who will work and learn in the school. Briefs for both traditionally procured and PFI projects are generally prepared by LEAs.

Although many LEAs and architects make efforts to consult with the users and wider community of the school, the current

funding structure often leaves little time for them to do so in any meaningful way. Exclusion from the design process leaves the school community with no real sense of ownership over the new building that they will be responsible for maintaining and improving over its lifetime. It also fails to maximise the benefits of the capital investment, because it does not take into account the way in which architectural changes can both support and act as a catalyst for educational and organisational changes within the school.

This lack of user focus is exacerbated even further within Private Finance Initiative (PFI) projects, which involve drawing in funding from and shifting risk to private sector companies or consortia. Within PFI, it is this consortium or company that is the client who commissions the architect and oversees construction. With increasing numbers of PFI contracts being awarded for large numbers of schools (batches) at one time, the psychological and practical distance between the client-designer (the consortium) and the users of the building increases as the consideration of each school in a 'batch' becomes less personal in the interests of exploiting economies of scale.

PFI companies and consortia frequently seek to maximise their profits and minimise costs by developing standardised 'product lines' that are subject to minor adaptations for specific sites, functions and clients – the so-called 'design and build' approach. Such 'off-the-shelf' products tend to assume all users have similar or the same needs and provide very limited opportunities for variation by the client. In other areas like housing such 'design and build' produces very poor quality design.

Regulations and Guidelines

A mixture of statutory and non-statutory documents regulates the environmental conditions of schools. Statutory Health and Safety regulations apply, as do a series of non-statutory DfES guidelines called Building Bulletins that recommend desirable environmental conditions. These Building Bulletins provide guidance across a range of architectural considerations, including structural requirements, fire safety, spatial requirements, acoustics, lighting, temperature, ventilation, condensation and fumes. Architects and planners have to

"The exclusion of the school community from the design process leaves them with no real sense of ownership over the new building."

consult up to a dozen Building Bulletins to guide and inform their designs of new school buildings.

These guidelines and regulations were more appropriate for the planned expansion of secondary education in the 1950s than for schools today. For instance, they require all schools to have a head teacher's office, but not dedicated meeting rooms for staff and students. They also stipulate a standardised ratio of toilets to hand basins, but do not require schools to have varied playground facilities.

Officials often apply these non-statutory guidelines as if they are compulsory standards, even though they do not have legal force. In the worst instances, standards that were originally conceived as minimum space requirements become maximum space provisions that don't allow for local variation. Designers and officials, who are keen to reduce the cost of invisible environmental improvements, often aim to achieve the mere bare minimum in classrooms, despite the higher student achievement achieved in better quality environments (Mackenzie and Airey 1999). Designs are rejected by officials because the space provisions, acoustics or temperature control, are considered to be too generous. This regulated design process enables the LEA or PFI consortium to meet its legal requirements, but often fails to meet the unique requirements of an individual school.

To act as an effective mechanism for assuring quality environments, a regulatory framework should enable all school environments to be optimised according to the latest knowledge and research. However, the current plethora of Building Bulletins and other guidelines that emanate from the DfES can act as a straitjacket to innovation. They make it difficult for architects and educators to respond creatively to local needs and aspirations, and perversely they hinder investment in high quality learning environments. Conversely, information on what has worked is not easily available. LEAs, who seek to impose this guidance on the design team, are often then responsible for the consequences that result from a lack of investment in quality.

"...the current plethora of Building Bulletins and other guidelines can act as a straitjacket to innovation."

45

Funding and Procurement

The capital funding framework for schools is complex and highly structured. It is further complicated by the fact that it is in a state of transition, moving from a highly centralised system, like other governance structures, to one in which a greater amount of capital funding is allocated by formula to local authorities and schools. One feature that seems destined to remain, however, is the separation of capital and operational funding. This is a traditional distinction originally designed to increase transparency in the way buildings are run, but which undermines the ability to get the maximum value out of buildings over their lifetime. One consequence of this feature of the funding system is that the DfES, LEAs, schools and architects tend to focus on designing and constructing buildings that have the lowest up-front cost, rather than considering the whole-life costs of a building and making decisions based upon the lowest lifetime costs, taking into account energy, maintenance and repairs.

Within many PFI projects the same company or consortium that designs and constructs the school will also provide finance and manage the school facilities for a defined period. At the end of this period, the school building will be returned to the local authority or a further PFI contract will be negotiated. While this approach does have the advantage of blurring the distinction between up-front capital and ongoing maintenance costs, it provides no incentive for the PFI bidder to design and build a school that will endure beyond the period for which it is responsible for its management and upkeep. The local authority may well be left with a building that is expensive to maintain, remove or replace. This arrangement creates perverse incentives for poor design and construction. PFI, in its current form, places too much emphasis on spreading the cost of refurbishing and replacing obsolete and unsuitable school buildings, and not enough on creating buildings that will meet the needs of society 30 years from now.

The cost-effectiveness of PFI procurement is also questionable. Negotiating a PFI contract is time and resource intensive for both the procurer and the preferred bidder. It can cost millions of pounds for companies and local authorities to go through the bidding process, without any assurance that negotiations will reach a successful conclusion. It is extremely rare for

"...architects tend to focus on designing and constructing buildings that have the lowest up-front cost, rather than considering the whole-life costs of a building."

smaller, younger architectural practices to become involved in PFI projects, as they cannot afford to take the risk or absorb the upfront costs of the project with no guarantee of success. These visible and invisible costs need to be taken into account when assessing the efficacy of PFI.

The Way in Which Architects are Engaged and Paid

Architects are remunerated according to a schedule of fees that are based on a percentage of the total cost of the building project: the higher the cost of the building's construction, the greater the fee that the architect receives. This method of remuneration has been widely criticised[2] for offering little incentive to architects to think about low-cost building solutions. It also exposes a tension between the desire of the professionals to maximise the cost of construction in order to maximise fees, and the desire of the client to keep costs down. In our view, this tension should be addressed in two ways. Firstly, we need a procurement framework that values buildings on the basis of their whole-life costs. Secondly, we should pay architects on the basis of a more sophisticated fee structure that takes into account the extent to which they deliver against the client requirements, including the performance of the building in use, appropriate environmental conditions, energy efficiency and sustainability.

Most architects who design school buildings today work in private practices, and are selected by tender or competition to design schools. There are over 30,000 practising architects in the UK, but the public image of the profession is dominated by a small number of personality driven architectural firms and partnerships. Although some local authorities continue to employ their own in-house design teams, this is far less common than it used to be[3]. Only a small percentage of new buildings are architecturally designed and one of the key means by which architects secure commissions, particularly for public buildings, is through competitions. The nature of competitions is such that entrants develop their design proposals on the basis of a short design brief that gives them very limited information and understanding of the users of the building. Winning entries are usually those that capture the imagination of the client, putting aside considerations such as whether the final building will function effectively,

"...we should pay architects for the extent to which they deliver against the client requirements."

[2] See, for example, the report of the Construction Taskforce, chaired by Sir John Egan (1998, The Stationery Office).

[3] In the post-war era, local authorities employed around 50 per cent of practising architects (Medd, 1966): today they employ 9 per cent of the 30,000 or so architects working in Britain.

be liked by users, or really can be delivered within the available budget.

One of the effects of the competitive and project-based nature of architectural practice is that little learning results from school building projects. Mistakes are repeated, lessons are not learned and good practice is not shared. Although some architects specialise in designing schools, this knowledge gives them a competitive advantage and there is little incentive for them to share it with others. This problem is further exacerbated by the fact that few new and refurbished schools are subject to post-occupancy evaluation, and by the lack of formal forums and mechanisms for sharing information and ideas across local authorities and schools as clients. The PFI process, in seeking to pass all responsibility and therefore all risk to the private sector, also inhibits a more collaborative approach between those who build and those who use and commission buildings. The closed and competitive nature of the PFI bidding process is, by its very nature, innately anti-collaborative.

The Architecture Profession

The architecture profession can only be entered after a lengthy period in higher education. Architecture schools conceive of and teach architecture as classical or 'high' art and 'pure' design. They encourage creative autonomy, and place little emphasis on teaching students how to understand, communicate and work with clients. The design process itself is seen as a lone, sedentary activity that happens in front of the drawing board, rather than as a collaborative, interactive and iterative process. Indeed, most architects in the UK work for themselves or in a small partnership of like-minded contemporaries[4].

There is a distinct architectural culture that emphasises the creation of 'beautiful' and 'landmark' buildings and relegates user needs to secondary status (Milner and Edge 1997). Critics have identified a lack of client-focus amongst designers and constructors, evidenced by the fact that a third of major clients are dissatisfied with consultants' performance in design and innovation, coordinating teams and providing value for money[5].

[4] 21 per cent of registered architects are sole principals and a further 30 per cent are principals in partnership. 46 per cent of all partnerships gave less than six architectural staff. Architecture also continues to be one of the most male dominated professions with women comprising only 12 per cent of all registered architects. Professional bodies, such as the Architects Registration Board and the Royal Institute of British Architects do not collect information by age or ethnicity.

[5] See, for example, the 1998 report of the Construction Taskforce chaired by Sir John Egan.

Research also suggests that architects tend to respond negatively to the opinions of others as either unwelcome interference or 'constraints' (Cuff 1988 cited in Milner and Edge 1997) and often do not share the same aesthetic preferences as the wider public (Halpern 1995). There is also the simple difficulty of communicating effectively between the largely verbal, written and interpersonal language of the users, and the highly visual, creative, practical and technical language of designers.

All these factors serve to create tensions and difficulties in the relationship between those who design and those who use schools. School Works argues these are best addressed by the introduction of a participatory process through which architects, together with professionals from other disciplines, engage directly with users to generate a holistic vision for the school and its facilities.

A New Approach to School Architecture

The process for designing school buildings, as described above, prioritises the demands of the government, the local authority and the architect over the needs and aspirations of the users. The result is a legacy of school buildings that, though they may have been cheap to build and have even won architectural awards, have, for the most part, failed to function as effective and inspirational spaces for teachers, learners and administrators, failed to address local needs, and failed to adapt to changes in education practice and priorities.

If we want to change the product, then we need to change the process. The time is ripe for a new approach to designing schools, involving a new set of relationships and different ways of working, and based on the twin principles of participation and partnership.

Participation

"...architects should engage directly with users to generate a holistic vision for the school and its facilities."

We have maintained throughout this pamphlet that there is no single model or recipe for good school buildings. Finding the right solutions for a particular school requires an individual design response, which should be based on an understanding of the different activities that go on within a school, the

49

various communities within it and the way in which they interact and use the space. It should also be based on an understanding of how the school would like to be in the future – its vision, aims and objectives – and on creating an environment that enables the realisation of that vision. We suggest that the school community should have direct input into the design process and indeed, be responsible for developing the design brief, supported by independent consultants with technical expertise. Teachers, pupils, classroom assistants, educational psychologists, Special Educational Needs coordinators, caretakers, heads of departments, parents and residents and so on, all have a detailed understanding of local needs and the culture and ethos, aims and aspirations of their school. They also understand the particular issues that require design solutions, and the way in which design can be complemented by other changes to administration, management, curricula and pastoral support.

The arguments for a participatory design process are not just based on better design solutions, but the other benefits that the School Works team has seen through its practical work. These include a greater sense of ownership of the new buildings by the people who use them, the educational benefits arising from the involvement of students in the design process, the improved self-esteem and empowerment of individuals that comes from inviting and valuing their views, the development of school community links, as well as a reduced likelihood of objections to design proposals.

Partnership

The direct involvement of school users in the design of school buildings needs to be complemented by greater partnership between all the key stakeholders: the DfES that provides funding and sets the policy framework; the architects who design new and renovated school buildings; educationalists who bring future thinking; the engineers and constructors who carry out the work; the local authority that owns most school properties and distributes capital funding locally; the building researchers, environmental psychologists and other academics who generate and disseminate important information about the built environment; and, of course, the users of the school.

"...the school community should have direct input into the design process."

At present, each of these parties operates in relative isolation from the others, coming together on the basis of formal contractual relationships focused on individual projects. School Works argues for a new set of relationships that are more strategic and enduring, and place greater emphasis on knowledge-sharing and collaboration.

Within the context of the school as client, the role of the LEA needs to be reconsidered. As the owners of the property in community schools, and given their responsibilities for ensuring sufficient places for pupils in local schools, LEAs clearly have a crucial part to play in planning local school property provision. We argue that they can best achieve this by integrating Asset Management Plans with Educational Development Plans and deciding at a strategic level how capital funding should be allocated across schools within their local area. LEAs should not, however, determine the detail of how capital allocations are to be spent in each school. The users of the building should be viewed as the client during the entire process.

LEAs also have a key role in protecting the best interests of the whole community and the other schools in the area. They should ensure that learning is systematised across different building projects. However, they should not monopolise project management of major building projects. All LEA support and guidance to schools should be costed to enable competition between different service providers. LEAs clearly have a role to play in creating new local authority schools where there is no clearly defined existing school community.

Greater efforts need to be made to ensure that the experience of completed projects is fed into subsequent ones. This requires a culture of openness and collaboration within the architecture and education professions. It also requires government agencies and departments such as the CABE[6] and the DfES to take an active role in encouraging or undertaking post occupancy evaluations or other objective assessments of completed projects. Such studies provide information about the extent to which the building meets the design brief, is effective in use and provides appropriate environmental conditions. It can also go beyond this, and measure the other benefits gained from the investment, such as improved pupil

"We need a new set of relationships that are more strategic and enduring, and place greater emphasis on knowledge-sharing and collaboration."

[6] Commission for Architecture and the Built Environment

51

attainment and behaviour, organisational effectiveness and staff morale. This information should be made available to clients, architects, constructors, manufacturers and educationalists, and should be used to inform the ongoing development of policy.

Establishing closer collaborative relationships between design, construction and education professionals would help ensure that design is properly integrated with construction and performance in use, and meets demands for buildings that are energy efficient, low maintenance, secure and environmentally sustainable. One way of achieving this is to appoint the construction team early in the design process [7], to enable them to develop a close relationship with the architects and the clients and have an understanding of the client's needs based on first-hand experience of the participatory design process.

There are a wide range of organisations that seek to focus attention on the importance of design and architecture, and the way in which the built environment affects our quality of life. Organisations like the Design Council should seek to place educational outcomes alongside inspirational form, in promoting the best of school design in Britain. Organisations such as the RIBA [8], CABE, the OECD [9], WHO [10], and private sector companies need to develop and share their knowledge about the effective design and optimum environmental conditions within learning organisations.

There are clear imperatives for establishing a strategic relationship between the architecture profession and education policymakers at national and LEA level. Policymakers need a better understanding of the design implications of new directions and demands in education, such as the drive for lifelong learning, social inclusion, changes in pedagogy and the greater integration of ICT into all aspects of school operations. In turn, architects would benefit from a better understanding of the priorities, pace and nature of change in the school sector, so that they can design buildings that are sufficiently responsive and flexible to meet the needs of teachers and pupils well into the future.

7 See Sir John Egan's Task Force report *'Rethinking Construction'*
8 Royal Institute of British Architects
9 Organisation for Economic Co-operation and Development
10 World Health Organization

Chapter 6: School Works' Recommendations

How do we create the conditions that enable a user-led design process, encourage greater collaboration, and forge partnerships, both between sectors that work in very different ways and within sectors in which organisations are used to competing? We argue that a new approach and set of relationships within school architecture can only be achieved if there are some fundamental shifts in the wider framework within which school buildings are currently procured and regulated.

Pupils and teachers deserve buildings that are beautiful as well as functional. The general impression still seems to be that inspirational architecture is an extravagance that is unacceptable in a school system that is stretched for resources. The reality is that beautiful buildings need not cost more: the attractiveness of a building can be improved by paying attention to detail, by making the most of natural materials and features such as light, and by talking to people about what they find to be pleasing on the eye. These should not be seen as 'extras' or 'add-ons' and neither should they necessarily stretch budgets – though they might require a greater up-front investment of time and energy. Moreover, any additional costs that are incurred need to be weighed up against the benefits to be gained from an attractive environment. Attention to design can generate huge efficiency savings through lower maintenance, more flexible use, passive and better planned security and organisational efficiencies. We often fail to take account of these benefits because they are difficult to quantify, but they include improved teacher motivation, pupil self-esteem, behaviour and attainment. School Works makes a number of recommendations in relation

"Pupils and teachers deserve buildings that are beautiful as well as functional."

to the funding and procurement framework for schools capital projects in order to make the most beneficial and effective use of resources.

We make the following six recommendations for change:

1. The 2% rule
The design process should be 'front-loaded' with up to 2 per cent of school capital investment earmarked for the participation of the whole school community in the development of the design brief. There should be scope within all procurement systems, including PFI, for user involvement in the development of the design brief. Investing time and money in getting the design right means a greater likelihood that efficiency and quality will be delivered. The allocated budget would enable the architect and an inter-disciplinary team to be appointed and paid before the design process takes place, allowing smooth delivery of the design and construction process. School Works has developed a phased participatory process, which provides an effective approach for engaging users in the design and renovation of school buildings (see the Process Diagram on pages 52 and 53, and the School Works Tool Kit). It is highly structured, but sufficiently flexible to be adapted to building projects of any scope and scale. It also provides a clear framework for an integrated approach to the physical and educational development of schools by linking 'hard' architectural changes with 'soft' educational, cultural and managerial change.

2. School users as school owners
School communities should replace local authorities as clients in major building projects. LEAs should provide costed commercial advice on managing capital spending in competition with private providers. They should also continue to play a strategic planning role, as well as playing a role in the monitoring and quality control of projects. They should lead on the design and development of new schools, ensuring that they involve the wider community in the design process.

3. Reduce the thicket of guidelines, and direct resources into knowledge sharing
Instead of imposing regulation and 'guidance' on a reluctant design team, resources should be dedicated to sharing

innovations and best practice. The research on the relationship between people and their environment should involve the re-education of the architecture profession. Ideally, architects would compete on their ability to deliver a high quality, low cost learning environment in schools. Designers should convince the client to invest in environmental conditions using the evidence of improved pupil performance and behaviour. This investment should be systematically assessed. Significant capital projects should be subject to post-occupancy evaluation, which should include an assessment of the design process and the construction stage of the project, especially where construction disrupts the functioning of a normal school.

The DfES and CABE should use the Internet to disseminate knowledge and establish client and professional networks. The government has a clear role in facilitating such partnerships, initially by putting in place arrangements to encourage the wide dissemination of research findings and the outcomes of project and post-occupancy evaluations.

4. Integrate educational and building plans
The introduction of Asset Management Plans was an important first step for rationalising and planning investments in the construction and maintenance of the built environment. In a second stage of development, the format should be developed to integrate building plans with plans for educational development, providing a simple and useful tool for integrating the planning of education and construction at the level of the school and for the integrated support from the LEA, thereby twinning architectural and educational expertise.

Similarly, the funding framework should make clear and explicit links between capital investment and the educational agenda for raising standards, diversifying school provision and promoting lifelong learning.

5. Measure lifetime costs
The cost of facilities management and maintenance should be integrated with the initial capital investment. School building projects should reflect the principles of 'best value', rather than just 'value for money'. This involves taking into account

longer-term costs such as management of new facilities (particularly 'flexible' facilities), maintenance, security, energy and flexibility to meet changing needs, alongside the short-term design and construction costs. It ensures that services are responsive to the changing long-term needs of the community. We are already seeing these principles in current PFI practice, but they should be standard for all building projects.

6. Appoint architects for the quality of their work and their approach

A new mechanism is needed to ensure that the best architectural talent is appointed to design our schools. Firstly, existing architecture competitions reward eye-catching designs, and tender processes often reward the lowest cost bidder. Architects should be appointed on the quality of their designs, the basis of post occupancy evaluations of their previous work (not necessarily schools), and on proposals to engage with the users and potential users of the new building. School Works has developed an architecture competition in collaboration with RIBA which focuses on these criteria for selecting architects[11].

Secondly, architects should work in partnership with other professionals in ways which enable them to harness the views and knowledge of the users of buildings. Their learning will help them to create effective learning environments with visually inspiring forms. Thirdly, fee structures for architects should not put a premium on pushing up the costs of expensive architectural gestures; rather they should reward the chosen approach of the architect[12].

School Works believes that the implementation of these six changes will ensure the effective use of the planned capital investment in the short term. Our practice, seminars and supporting events have revealed widespread support for the suggested measures, which although far reaching are 'do-able'. In the longer to medium term, a world-class educational system can only be built through effectively integrating the educational agenda to a new framework for procuring and designing school buildings.

"...a school building symbolises a set of values and acts as a metaphor for the extent to which the nation or community value education."

[11] See School Works website www.school-works.org

[12] Our observations clearly have implications for the curricula and styles of teaching in architecture schools; but we recognise that implementing these changes is beyond the remit of School Works.

5.6

School Works
Process Diagram

Stage 1: Definition and Preparation

— Decide on project remit and define parameters of capital investment

— New style competitive appointment of architect and contractors

— Bring together multidisciplinary team

— Develop project plan

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Stage 2: Strategic Vision

Workshops and interviews with senior school staff to understand or define school's strategic vision and identify project champion.

Deliverable:
A clear statement of school's strategic vision

↓

Stage 3: Strategic Brief

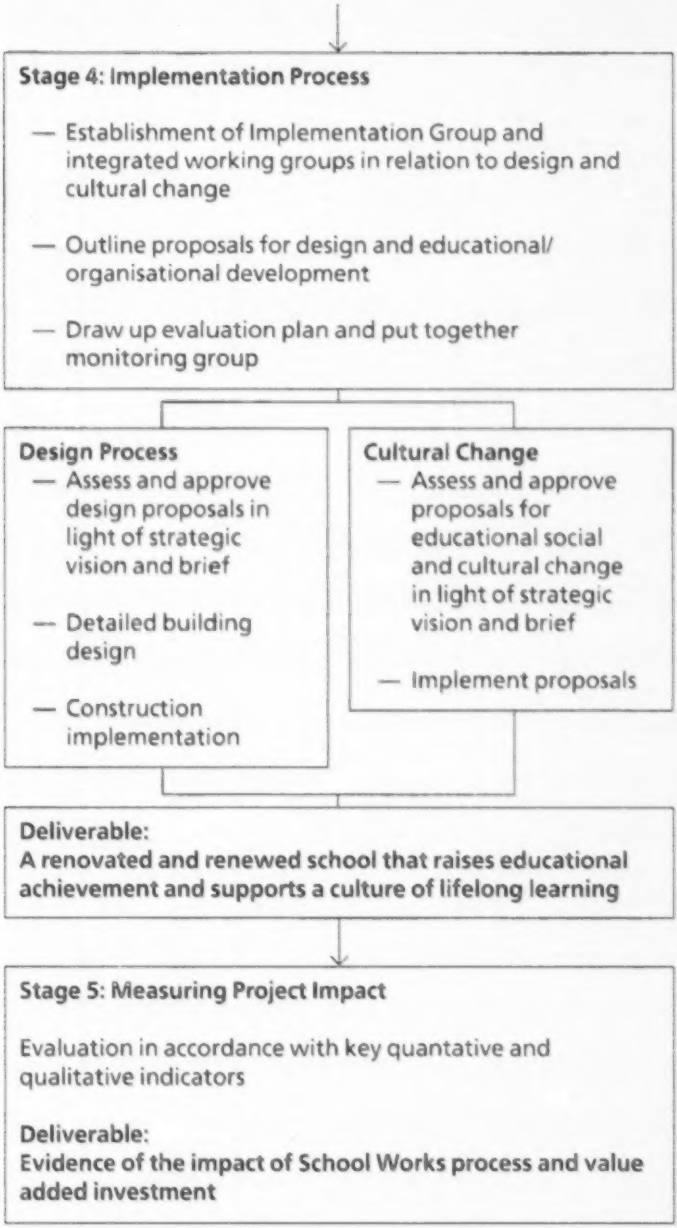
— Identify and explore issues

— Prioritise and build consensus

— Identify key indicators for project evaluation

Deliverable:
A strategic brief containing:
a) Findings from the participatory process
b) A statement of requirements to achieve the strategic vision and priorities identified
c) A preliminary design proposal (Level C)
d) A framework for project evaluation

↓


Stage 4: Implementation Process
— Establishment of Implementation Group and integrated working groups in relation to design and cultural change
— Outline proposals for design and educational/ organisational development
— Draw up evaluation plan and put together monitoring group
Design Process
— Assess and approve design proposals in light of strategic vision and brief
— Detailed building design
— Construction implementation
Cultural Change
— Assess and approve proposals for educational social and cultural change in light of strategic vision and brief
— Implement proposals
Deliverable:
A renovated and renewed school that raises educational achievement and supports a culture of lifelong learning
Stage 5: Measuring Project Impact
Evaluation in accordance with key quantative and qualitative indicators
Deliverable:
Evidence of the impact of School Works process and value added investment

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Little thought has been given to the way in which the process of schooling and the physical environment in which it takes place are connected. School Works argues that there is a need to give greater attention and priority to the role of architecture and to acknowledge within policy its importance in supporting school effectiveness.

For schools to be able to deliver a different and better education to pupils and educational services to the wider community, we need a radically different approach to the process of building schools. The failure to integrate 'hard' processes of design with 'soft' changes in education and the culture of learning is one of the major obstacles limiting the possibility of real change.

Learning Buildings makes six recommendations for policy change, which will facilitate this new approach to school design.

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